Amendments to the Specification:

Please replace the title with the following:

A System for the Tracking and Motion Control of a Professional Video Camera Permitting the Combination of both Real and Virtual Images ~~A PROCESS FOR THE TRANSMISSION OF DATA REPRESENTING THE POSITION IN SPACE OF A VIDEO CAMERA AND A SYSTEM FOR THE IMPLEMENTATION OF THE PROCESS~~

Please replace the paragraph at page 2, line 1, with the following:

SPECIFICATION ~~**DESCRIPTION**~~

~~The invention concerns~~ A system for the transmission of data describing the position in space of a video camera in motion is presented. It is capable of transmitting the spatial coordinates of the camera, in real time. By so doing, it permits the determination of spatial coordinates for the focal plane of video images. Such a device is generally known as a "motion control" or "tracking camera". A system for the implementation of this process is also described.

Please replace the paragraph at page 2, line 20, with the following:

- ~~First field of application:~~The characterization of images within a video stream with respect to the position in space of their focal planes.
- ~~Second field of application~~:The determination, in real time, of the field of view of a video camera moving within a virtual decor.

Please replace the paragraph at page 3, line 10, with the following:

More and more, the decor of a film is composed, entirely or in part, of virtual images. Thus, it now becomes difficult, under certain conditions, to determine the framing of a video camera precisely, especially when it is in motion. In that case, it becomes necessary to visualize, in real time, an outline of the framing of the camera within a three-dimensional virtual decor. The three-dimensional decor is modeled first. When the spatial positions of the camera and the focal distance are known, the virtual image of the frame is reconstructed, in real time, by a computer program which renders it three dimensional, ~~in real time~~

Please replace the paragraph at page 3, line 20, with the following:

A previously issued patent by the same inventor, patent No. 10/553,885, entitled "A PROCESS FOR THE TRANSMISSION OF DATA REPRESENTING THE POSITION IN SPACE OF VIDEO CAMERA AND A SYSTEM FOR IMPLEMENTATION OF THE PROCESS" also makes reference to a system for the transmission of data describing the position in space of a video camera in motion by using an inertial control unit. However, the presently described device is different in several ways:

- The primary function of the previously patented process is to provide a three dimensional model of an object, whereas the main function of the system described in the present application is to enable permit the facile imbedding of virtual images onto real images, for use within a film, while using a light and highly mobile (shoulder-held) camera.
- The system previously patented is integrated into camera specially designed for that purpose, whereas the present system is attached to a previously existing camera, usually a professional video camera.
- The methods of data analysis are quite different. The previously patented device processes the data using a free-standing computer containing photogrammetric software in order to obtain a three dimensional model of the scene. On the other hand, in the present device, data analysis is performed utilizing software often referred to as "compositing programs" which enables the imbedding of images from other sources (other films, models, virtual images, etc.) onto images filmed with a camera in motion.

Please replace the paragraph at page 4, line 12, with the following:

At present ~~state of art there exist~~, a certain number of systems exist which attempt to respond to needs of this type. These may be divided into two principal categories.

Please replace the paragraph at page 15, line 15, with the following:

Step 1 (block 51): This is a preliminary step involving the configuration of the system.

Please replace the paragraph at page 15, line 15, with the following:

Step 2 (block 52): Initialization of the system.

Please replace the paragraph at page 21, line 5, with the following:

"Numerical Recipes in C++", in: The Art of Scientific Computing, William H Press, Saul A. Teukolsky, Brian P. Flannert and William T. Vetterling, eds., January, 2002.

Please replace the paragraph at page 21, line 31, with the following:

Step 4 (block 54): data acquisition.

Please replace the paragraph at page 22, line 24, with the following:

Step 5 (block 55): improving image localization measurements by image analysis:

Please replace the paragraph at page 24, line 17, with the following:

Step 6 (block 56): data synchronization.

Please replace the paragraph at page 24, line 31, with the following:

Solution 1: Images-position synchronization can be done by using the traditional images-sound synchronization method utilized by the movie industry. One films a hand-clap. Then one "pastes" the film frame where the clapping hands come together to the moment on the sound track where one hears the sound of the clap.

Please replace the paragraph at page 25, line 8, with the following:

Solution 2: The video camera (10') contains circuits which generate an output signal indicating the moment at which the operator (*OP*) begins to record a new sequence of images. This signal is received by the microprocessor (4) of the second subsystem (2) and the recording of positional data is initiated immediately.

Solution 3: One can attach a small, auxiliary video camera (100'), light-weight and of low definition, to the primary video camera (10') or to the first subsystem (11'). In this case, the recording of the images and of the position data stream is simultaneous. The direction of

the objective of the auxiliary video camera (100') is the same as that of the primary video camera (10'). As a result, the little video camera (100') films the same scenes with the same positions. It suffices, then, to superimpose the two image streams to synchronize the images from the primary video camera (10') with the data stream.

Step 7 (block 7): data storage

Please replace the paragraph at page 26, line 9, with the following:

Step 8 (block 58): subsequent analysis of the characterized images.

The operator (*OP*) may, at his/her leisure, exploit the data base of characterized images in order to modify them *a posteriori*.

As has been mentioned previously, the invention has multiple and varied applications, notably the following:

Application 1: In the film special effects industry, there is often a need to imbed synthetic images into images filmed with a camera in motion. If one knows, with precision, the spatial coordinates of each image and the focal length employed, it becomes easy to fit the synthetic images into the various images of the film, which is exactly what the processes of the invention permit. The coordinates of the focal plane (*FP*) of an image (*I* in figure 2) are, as previously defined:

Please replace the paragraph at page 26, line 26, with the following:

Application 2: Films photographed with shoulder-held cameras may be subject to sudden variations in trajectory, as well as to shocks and/or vibrations. Knowing the image positions may serve to smooth out an image sequence, especially thanks to the use of existing image interpolation software. Again, the use of the invention permits this goal to be attained.

Application 3: To give slow motion effects without having jerky images, the special effects industry uses special software to create "virtual" images between two successive images that have been actually filmed. Knowing the trajectory of the focal plane, as the use of the invention allows, makes this interpolation of images rapid and reliable.

Application 4: A traditional cinema trick involves superimposing images. A classic example is to film one person, then to film the same person in a different place in the scene and, finally, to superimpose the two images. The person who has been filmed appears to be in two places at once. This effect, which is relatively easy to accomplish when the image

planes are stationary, becomes much more difficult when they are in motion. It is then necessary to synchronize the two image sequences in which the image planes cover the same areas, and this is exactly what the invention permits one to do.

Please replace the paragraph at page 27, line 22, with the following:

Step 9 (block 59): obtaining a "pointer" in three-dimensional space in order to navigate in a virtual universe.